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of osteology, as giving a clue to the labyrinth of names due to the premature assumption of homologies between the fish skeleton and that of man.

There are now few fields in zoölogy so little worked and at the same time so repaying as that of the comparative osteology of the bony fishes. Most anatomists treat the group as though all bony fishes were alike in their osteology.

The paper is illustrated by plates of the skeleton of the "Striped Bass," the best drawing of the fish skeleton yet published. These are by Mrs. Chloe Lesley Starks.

D. S. J.

Eigenmann on a New Psenes from Newport, Rhode Island. — In the *Bulletin of the United States Fish Commission*, Dr. C. H. Eigenmann describes a new oceanic fish from the Gulf Stream off Newport, under the name of *Psenes edwardsi*. It was found, as is often the case with other nomeid fishes, under a Portuguese man of war. The diagnosis of the family Nomeidæ is amended by Dr. Eigenmann. The group possesses, like the Stromateidæ, denticles in the throat, and, according to Eigenmann, it differs only in the larger number of the vertebræ. But in Stromateidæ, as in Nomeidæ, the vertebræ are in increased numbers, 30 to 36. I know at present no real difference between the two families.

D. S. J.

Eigenmann on the History of the Young Squeteague. — In the *Bulletin of the United States Fish Commission*, Dr. Eigenmann gives a useful study of the development of the young weakfish, or squeteague, *Cynoscion regalis*.

D. S. J.

Nishikawa on the Development of the Japanese Anchovy. — In the *Journal of the Japanese Fisheries Bureau*, Mr. T. Nishikawa gives a similar study of the development stages of the common anchovy of Japan, *Engraulis japonicus* Schlegel. By some error, Mr. Nishikawa accredits the name *japonicus* to Houttuyn. Houttuyn's *Atherina japonica*, however, was not an anchovy but a sardine.

D. S. J.

Boulenger on the Classification of the Trachinoid Fishes. — In the *Annals and Magazine of Natural History*, Dr. G. A. Boulenger has a very valuable study of the osteology and relationships of the group of fishes called Trachinoidea.

The family of Trachinidæ was established by Dr. Günther in 1861, for spiny-rayed fishes, with perfect ventrals, short first dorsal, and lacking the special traits of other related groups.

The family was evidently a provisional one, and several writers, notably Dr. Gill and Dr. Bleeker, have noted the incongruity of its members and suggested the removal of certain of its subdivisions to other groups. Nevertheless, in default of any study of the skeletons, these families have been kept in some sort of association by subsequent writers. The study of the skeletons shows plainly the necessity of a complete revision of the assemblage. This has been done by Dr. Boulenger.

Dr. Boulenger shows first that in Trachinus the scapular fenestra, as in the codfishes, lies between the scapula (hypercoracoid) and the coracoid (hypocoracoid) instead of piercing the former, as in ordinary fishes. This character is shared by Notothenia, Chænichthys, Parapercis, Eleginops, Harpagifer, Trichonotus, Callionymus, and their relatives. All these lack the supraocular lamina, which is present in Trachinus. Trichonotus and Callionymus show other osteological characters, which separate them as families, although not invalidating their general trachinoid relationship. The genus Percophis agrees closely in osteology with Trachinus, but the scapular fenestra is entirely within the scapula as in the percoid fishes.

Bembrops, Chimarrhichthys, and Leptoscopus agree with Notothenia in the absence of a subocular lamina, but differ in having the fenestra within the scapula. These forms show affinities with the Batrachoididæ. Boulenger refers them to Leptoscopidæ.

Dactyloscopus, which has reduced ventrals and the pectoral arch of Clinus, is regarded as a true blenny, notwithstanding its apparent likeness to Uranoscopus. Gillellus, Dactylagnus, and Myxodagnus will doubtless go with it.

Uranoscopus and its allies (Anema, Ichthyscopus, Kathetostoma, Ariscopus) have also the scapular fenestra in the scapula, but show a number of other osteological peculiarities. They are, however, unquestionably trachinoid in general relationship.

The group Trachinoidea in Boulenger's view, therefore, includes the following families: Trachinidæ, Nototheniidæ, Percophidæ, Leptoscopidæ, Uranoscopidæ, Trichonotidæ, and Callionymidæ. All these agree with the Blenniidæ, Batrachoididæ, Ophidiidæ, and Gadidæ in having jugular ventrals, in which the fin rays are frequently not of the normal number which is I, 5. For the division or suborder of fishes thus characterized, containing these families and their allies, Dr. Boulenger proposes to revive the old name "Jugulares."

The remaining genera referred to Trachinidæ or to Trachinoidea show no real affinity with Trachinus, Callionymus, and Uranoscopus.

They have not jugular ventrals and should be removed to other parts of the system.

The Chiasmodontidæ (including Chiasmodon, Pseudoscopelus, and apparently Champsodon) have the ventrals rather abdominal than thoracic, not being connected with the pectoral arch, or in Champsodon joined by ligament only. These may be Percesoces, but that is very unlikely and their real affinities are doubtful.

The Trichodontidæ (Trichodon and Arctoscopus) are percoids, most nearly related to the Latrididæ.

The Sillaginidæ are, as supposed by Cavier, most nearly allied to the Sciænidæ.

Most of the remaining genera agree closely in skeletal characters, notwithstanding their variations in external appearance, and their actual relationships are altogether percoid, approaching closely to the genus Plesiops, which Boulenger ranges among the Serranidæ of the Anthias group. These constitute the family Pseudochromididæ, composed of Pseudochromis, Cichlops, Opistognathus, Latilus, Caulolatilus, Malacanthus, Bathymaster, and their allies. This family seems to the writer still very heterogeneous. Bathymaster has a greatly increased number of vertebræ, Pseudochromis has two lateral lines, and Opisthognathus differs superficially in many ways from Latilus. Cepola, not mentioned by Boulenger, must lie near this group as a distinct family, Cepolidæ. Pinguipes differs from all this in lacking the supraocular lamina. It forms a distinct family, Pinguipedidæ.

D. S. J.

Jordan on Distribution of Fishes. — In *Science*, Dr. Jordan has an extended account of the origin of the fish fauna of Japan, with deductions of general application from the relation of the Japanese fauna to those of other regions.

He finds no evidence from the fishes of a direct connection between Japan and the Mediterranean, and no evidence of the submergence of the Isthmus of Suez. In the large identity of genera, and the divergence of species on the two sides of the Isthmus of Panama, he finds evidence of former submergence (perhaps Miocene) but none during the lifetime of the present species. He does not find in the wide distribution of the Antarctic fresh-water troutlike genus, Galaxias, certain evidence of the former union of South America and Australia in Antarctic Continent, but would accept the theory on geological evidence.